REMARKS

Claims 16-19, 25-28 and 30-40 are presently in the application. Claims 1-15, 20-24 and 29 have been canceled. Claims 36 and 40 have been rewritten as independent claims. Claims 16, 18, 25, 27, 28, 31, 34, 35, 37 and 38 have been amended to depend from amended claim 40. Thus, applicants submit that this amendment raises no new issues.

Applicant would like to thank the examiner for the thorough consideration given to this application.

Reconsideration of the final rejection of claim 40 under 35 U.S.C. 103(a) as unpatentable over Hopkins et al (US 5,620,599) in view of Coates et al (US 5,707,518) is respectfully requested.

The examiner maintains that Hopkins et al lack a teaching that the filter element (302) is inserted inside the filter housing (200) via guide rails provided on the side walls.

The examiner relies upon Coates et al as teaching a filter assembly 22 (Fig 9) having a filter element 42 inserted inside a filter housing 40 via ribs 86 (guide rails). The examiner points out that the ribs 86 support and radially align or orient the filter element 42 inside the housing 40, as explained in col. 5, ll. 22-28 of the specification.

The examiner concludes that it would have been obvious to provide the housing of Hopkins et al with guide rails, as taught by Coates et al, in order to support and radially align or orient the filter element inside the housing.

Contrary to the examiner's conclusion, the rejection of claim 40 over Hopkins et al in view of Coates et al is not deemed to be a proper or valid rejection. Thus, applicants respectfully traverse this rejection for reasons presented below.

The examiner's attention is directed to col.1, ll. 11-15, wherein Hopkins et al describe the invention as a low hold-up filter assembly which provides for reduced fluid hold-up volume waste when replacing filters and for even flow distribution through the filter during normal use (col. 1, ll. 11-15).

Hopkins et al explain that a costly problem with the use of any filter is hold-up volume waste. When a filter must be replaced, a portion of the fluid remains within the filter element housing. The remaining fluid cannot be reused due to contamination; therefore, this excess fluid must be disposed of and replacement of the fluid can be costly, e.g., six hundred or more dollar per gallon. In addition to the direct cost of replacing the wasted fluid, there is the cost of disposal. Also, environmental factors need to be considered in the disposal of the chemicals thereby making disposal of the chemicals potentially as costly as buying new chemicals (col. 1, ll. 18-41).

To solve the problem of hold-up volume waste, Hopkins et al teach a filter assembly 100 that provides for an efficient and low cost means of decreasing fluid hold-up volume waste. The filter assembly comprises a filter element 300 and a sleeve 400 which fit into a filter housing 200 and occupy a significant portion of the volume of the housing, thereby leaving less fluid in the housing during filter change. The sleeve 400 is positioned in the filter housing 200 surrounding the filter element and preferably occupies substantially the entire volume between the filter housing 200 and the filter 302. Thus, the sleeve virtually fills the volume of the gap between the larger diameter filter housing 200 and the filter 302. By occupying a significant portion of the volume between the filter housing 200 and the filter 302, the sleeve 400 greatly reduces the hold-up volume of the filter housing (col. 4, l. 66 -

col. 5, l. 5). In other words, due to the sleeve occupying a significant portion of the volume between the filter housing 200 and the filter 302, there is little waste fluid remaining in the filter housing 200 when the filter element 300 and the sleeve 400 are removed (col.7, ll. 27-31).

Coates et al, with respect to Fig. 9, describe a filter assembly 22 having a filter housing 40 comprising a first housing part 44 and a second housing part 46 (col. 3, ll. 56-57). The first housing part 44 is closed at its upper end by an end wall 66 and has a generally cylindrical sidewall 68 (col.4, ll. 12-14). The second housing part 46 includes a bowl-shaped lower portion 78 and an upstanding, generally cylindrical sidewall 80 (col. 4, ll. 43-44). The bowl-shaped portion 78 of the second housing part has a series of ribs 86 formed on an internal surface thereof to aid in locating and supporting the filter cartridge 42 during assembly. The ribs 86 include a first part 86a and a second part 86b. The first part 86a of the ribs 86 define a horizontal support surface for the filter cartridge 42, while the second part 86b extend upwardly from the first parts 86a and define vertical surfaces which radially surround and support the filter cartridge 42 (col. 4, ll. 52-60).

Thus, as may be clearly seen from Fig. 9, the first part 86a of the ribs 86 support the filter cartridge 42 a significant distance away from the bowl-shaped portion 78 of the second housing part 46, while the second part 86b of the ribs 86 functions to space the filter cartridge 42 a significant distance away from the cylindrical sidewall 68 of the first housing part 44 and the cylindrical sidewall 80 of the second housing part 46.

Therefore, if one skilled in the art were to actually combine the teachings of Hopkins et al and Coates et al, the resulting structure would be a filter assembly constructed according

to the teachings of Hopkins et al, but having a series of ribs formed on the internal surface of the filter housing 200, as taught by Coates et al, to aid in locating and supporting the filter element 300 during assembly. However, in addition to locating and supporting the filter element 300 during assembly, the first part of the ribs would define a horizontal support surface for the filter element 300 that would space the filter element 200 a significant distance away from the end wall 213 of the filter housing 200, while the second part of the ribs would function to space the filter element 200 a significant distance from the cylindrical sidewall 211 of the filter housing 200.

MPEP §2143.01(V) states: "If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

It is submitted that providing Hopkins et al with ribs, as suggested by the examiner in the rejection, would result in the filter element 300 being spaced a significant distance from the end wall 213 and the side wall 211 of the filter housing 200, which would increase the hold-up volume waste in the filter housing, thus rending the prior art invention unsatisfactory for its intended purpose,

In summary, the intended purpose of the Hopkins et al invention is to solve the problem of hold-up volume waste in a filter assembly. Hopkins et al solve the problem by decreasing fluid hold-up volume waste in the filter housing. The fluid hold-up volume waste in the filter housing is decreased by having the filter element 300 and a sleeve 400 fit into the filter housing 200 and preferably occupy substantially the entire volume between the filter

housing 200 and the filter 302, thereby leaving less fluid in the housing during filter change. By occupying a significant portion of the volume between the filter housing 200 and the filter 302, the sleeve 400 greatly reduces the hold-up volume of the filter housing (col. 4, l. 62 - col. 5, l. 5).

Modifying Hopkins et al by providing guide rails (ribs), as taught by Coates et al, would result in the filter element 300 and a sleeve 400 fitting into the filter housing 200 and occupying significantly less of a portion of the volume of the housing, thereby leaving much more fluid in the housing during filter change. In other words, forming a series of ribs on the internal surface of the filter housing 200 of Hopkins et al, as taught by Coates et al, would result in the filter element 300 being spaced further away from the end wall 213 and the cylindrical sidewall 211 of the filter housing 200, thus allowing more fluid to remain in the filter housing 200 when the filter element 300 and the sleeve 400 are removed.

Accordingly, since the proposed modification would render the invention of Hopkins et al unsatisfactory for its intended purpose, there is no suggestion or motivation to make the proposed modification and claim 40 is not rendered obvious as required by 35 U.S.C. 103.

In addition to the problem of hold-up volume waste, Hopkins et al further explain that another problem encountered in filter use is uneven fluid flow. For example, where more fluid flows through the upper portion of a filter element than through the lower portion, more dirt and/or other debris is deposited on the upper portion of the filter than on the lower portion. This uneven loading of the filter element can shorten the life of the filter element, which results in more frequent replacement of the filter element and increased material and labor costs, as well as system down time (col. 1, ll. 42-51).

To solve the problem of uneven fluid flow, Hopkins et al teach configuring the filter element and sleeve to provide even flow distribution along a filter disposed in the filter housing while maintaining desired system flow rates and pressures (col. 3, ll. 7-14). To insure evenly distributed flow of fluid along the filter, the sleeve 400 is provided with a plurality of channels 411 formed in the outer periphery of the sleeve and a plurality of flow apertures 422 formed in the channels 411 and communicating through the sleeve (col.5, ll. 45-49). The channels and flow apertures are configured to provide adequate flow rates, even flow distribution, and very small pressure drops as fluid flows to or from the filter (col. 5, ll. 59-62).

MPEP §2143.01(VI) states: "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teaching of the references are not sufficient to render the claims *prima facie* obvious." *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)

If one skilled in the art were to actually combine the teachings of Hopkins et al and Coates et al, the resulting structure would be a filter assembly constructed according to the teachings of Hopkins et al, with a series of ribs formed on the internal surface of the filter housing 200, as taught by Coates et al, e.g., at least along the lower portion of the filter disposed in the filter housing, protruding into the gap between the sleeve 400 and the filter housing 200. However, the protruding series of ribs along the internal surface of the filter housing 200, as taught by Coates et al, would interfere with the even flow distribution of the fluid along the filter and the maintaining of desired system flow rates and pressures. The uneven flow would result in more fluid flow through the upper portion of a filter element than

through the lower portion, and more dirt and/or other debris being deposited on the upper portion of the filter than on the lower portion. This uneven loading of the filter element would shorten the life of the filter element, which would result in more frequent replacement of the filter element and increased material and labor costs, as well as system down time. This is the problem that Hopkins et al intend to avoid by their invention (col. 1, ll. 42-51).

Thus, as mentioned previously, Hopkins et al solve the problem of uneven fluid flow by providing the sleeve 400 with a plurality of channels 411 formed in the outer periphery of the sleeve and a plurality of flow apertures 422 formed in the channels 411. The channels clearly do interfere with the even fluid flow along the filter because they do protrude into the gap between the sleeve 400 and the filter housing 200. Therefore, configuring the sleeve 400 with channels provides adequate flow rates, even flow distribution, and very small pressure drops as fluid flows to or from the filter. However, modifying Hopkins et al by providing guide rails (ribs), as taught by Coates et al, would result in uneven fluid flow, for the reasons mentioned hereinabove, and would change the principle of operation of the Hopkins et al invention.

Accordingly, since the proposed modification or combination of the prior art would change the principle of operation of Hopkins et al, the teaching of the references are not sufficient to render the claims *prima facie* obvious as required by 35 U.S.C. 103.

Claims 16-19, 25-28, 30-35 and 37-39 have been amended to depend directly or indirectly from independent claim 40. Therefore, claims 16-19, 25-28, 30-35 and 37-39 are patentable over the combination of Hopkins et al and Coates et al for the same reasons claim 40 is patentable over these references.

Reconsideration of the final rejection of claim 36 under 35 U.S.C. 103(a) as unpatentable over Hopkins et al (US 5,620,599) in view of Janik et al (US 6,364,121) is respectfully requested.

The examiner maintains that Hopkins et al lack a teaching that the second side wall of the filter housing slopes downward towards a water outlet and constitutes a sump for water separated out on the dirty side of the filter element.

The examiner relies upon Janik et al as teaching a filter assembly 10 having a housing 60 with a wall sloping downward toward a water outlet that constitutes a sump 66 for water separated out on the dirty side of the filter element (col.3, ll. 15-19).

The examiner concludes that it would have been obvious to provide the filter housing of Hopkins et al with a wall sloping downward to form a sump and a water outlet, as taught by Janik et al, in order to collect water that coalesces from fuel, if the filter is used to filter fuel or oil.

Contrary to the examiner's conclusion, the rejection of claim 36 over Hopkins et al in view of Janik et al is not deemed to be a proper or valid rejection. Thus, applicants respectfully traverse this rejection for reasons presented below.

Janik et al do not teach or suggest providing a filter housing with a longitudinally extending side wall sloping downwardly toward a water outlet that constitutes a sump for water separated out on the dirty side of the filter element as claimed in claim 36. In col. 3, ll. 12-19, Janik et al teach a disposable fuel filter cartridge comprising a can-like housing 60 formed by a pair of opposed upper and lower cup-like sections 62, 64, respectively. A sump 66 is formed at the bottom of the lower section 64 to collect any water which coalesces from

the fuel. However, no water outlet is disclosed, taught or suggested by Janik et al. Thus, Janik et al merely teach forming a sump, without a water outlet, in an end wall of the filter housing 60. Therefore, Janik et al lack any teaching of providing the filter housing 60 with a longitudinally extending side wall sloping downwardly toward a water outlet that constitutes a sump for water separated out on the dirty side of the filter element.

If one skilled in the art were to actually combine the teachings of Hopkins et al and Janik et al, without the benefit of hindsight, the resulting structure would be a filter assembly constructed according to the teachings of Hopkins et al, but with the end wall 213 of the filter housing 200 sloping toward a sump formed therein but without a water outlet, as taught by Coates et al. In other words, Janik et al would have taught one skilled in the art to modify the end wall 213 of the filter housing 200 in Hopkins et al, not the longitudinally extending side wall(s) 211 of Hopkins et al as required by claim 36. Thus, one of ordinary skill in the art would never have arrived at the subject matter defined by applicants' claim 36.

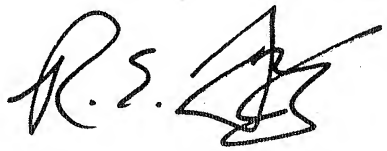
Accordingly, since the proposed modification or combination of the prior art does not teach the structural arrangements recited in claim 36, the claim is not rendered obvious as required by 35 U.S.C. 103.

The present amendment raises no new issues, does not require a new search and greatly simplifies the issues for appeal. Thus, entry of the amendment is clearly appropriate.

The Commissioner is hereby authorized to charge any necessary fees in connection with this communication to Deposit Account Number 07-2100.

Entry of the amendment and allowance of the application are respectfully requested.

Respectfully submitted,



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